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09/870,257	05/30/2001	Isao Matsumoto	13041.13US01	7404

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EXAMINER

DOVE, TRACY MAE

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 12/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/870,257

Applicant(s)

MATSUMOTO, ISAO

Examiner

Tracy Dove

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-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-23 is/are pending in the application.
- 4a) Of the above claim(s) 11-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 22 and 23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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DETAILED ACTION

This Office Action is in response to the communication filed on 10/2/03. Applicant's arguments have been considered, but are not persuasive. Claims 1-10, 22 and 23 are rejected. This Action is made **FINAL**, as necessitated by amendment.

Election/Restrictions

This application contains claims 11-21 drawn to an invention nonelected with traverse in Paper No. 6. A complete reply to the final rejection must include cancelation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Specification

The objection to the specification has been withdrawn.

Claim Objections

The objection to the claims has been withdrawn.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 23 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a nickel positive electrode having a thickness of 500 μm or less, does not reasonably provide enablement for any non-sintered electrode having a thickness of 500 μm or less. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with these claims. The specification states that while the invention is not limited to a nickel positive

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electrode, in the application of a nickel positive electrode, a thinner nickel positive electrode is provided in which the thickness is 500 μm or less (page 8). The specification discloses a nickel positive electrode having a thickness of 500 μm or less.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-10, 22 and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites “the concave parts are closest in position to the convex parts” and “the convex parts are closest in position to the concave parts”, which is confusing. Examiner suggests amending the claims to recite “each concave part is adjacent to a convex part” and “each convex part is adjacent to a concave part”. The suggested amendment is supported by original claim 1.

Claim 1 recites “the number of groups of concave parts” and “the number of groups of convex parts”, however it is unclear what “a group” encompasses. The phrase “the number of groups of concave parts is not less than half the number of groups of concave and convex parts” is indefinite because “a group” is not defined by the claim.

Claim 1 recites “the groups of concave parts are closest in position to the groups of convex parts” and “the groups of convex parts are closest in position to the groups of concave parts”, which is confusing. It is unclear how the groups of concave parts are closest in position to the groups of convex parts and the groups of convex parts are closest in position to the groups of concave parts.

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Claim 1 recites “the walls of said concave and convex parts are contoured in one direction so as to be more tilted in the same direction at areas closer to the edges of the concave and convex parts”, which is confusing. See also Claims 4 and 7.

Claims 1, 10 and 23 recite “walls of said concave and convex parts are contoured in one direction”, which is confusing because walls of concave parts are contoured or rounded inward and walls of convex parts are contoured or rounded outward. Thus, the walls of the concave parts and the walls of the convex parts cannot be contoured in one direction (same direction).

Note in claim 9 “perpendicular to the direction of a spiral” is interpreted as a concave or concave part which extends perpendicular to an axial direction of a spiral wound electrode.

See rejections of claim 1 regarding similar language contained in claim 23.

** To the extent the claims are understood in view of the 35 U.S.C. 112 rejections above, note the following prior art rejections.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-10 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawano et al., WO 99/63608.

Kawano teaches a metal sheet which constitutes a non-sintered electrode support processed to have minute irregularities on its surface. The irregularities comprise protrusions

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(convex parts) and indentations (concave parts). See abstract. The protrusions and indentations have a center-to-center pitch (P) in the range of from 50-300 μm (Figure 2). The center-to-center P is preferably in the range of 100-200 μm (page 7, line 1). Kawano has a specific teaching of a P of 100 μm (page 12, line 19 and Figure 3). The electrode support is pasted/coated with active material (page 14, lines 1-13). Thus, Kawano teaches that a majority of the active material is within 150 μm of the electrode support (Kawano teaches the active material is within 100 μm of the electrode support). Thus, claim 10 is anticipated.

Figure 5 of Kawano shows an electrode support having a three dimensional structure with multiple protrusions 9 (convex parts) and indentations 8 (concave parts). The number of indentations is more than half the number of protrusions. The indentations and protrusions are adjacent and the closest parts to the indentations are protrusions. The number of protrusions is greater than half the number of indentations. The indentations and protrusions are adjacent and the closest parts to the protrusions are indentations. Figures 2A and 2B show contoured walls of the protrusions and indentations. Figure 1a shows the electrode support with indentations and protrusions having edges that are thinner at areas closer to the surface of the electrode. Thus, claim 1 is anticipated. The electrode support may be constructed of a punched metal or a non-punched metal sheet and is preferably made of nickel, steel or nickel-plated steel. The protrusions and indentations should preferably be formed in a tapered shape such as conical shape, but may also be formed in hemispheric shape. See page 6, lines 17-31. The arrangement of the protrusions and indentations may be such that they are formed alternately in one direction or in both longitudinal and transverse directions (page 7, lines 12-15). The electrode support may be pasted with nickel hydroxide or cobalt oxide (page 8, lines 10-25). Thus, claims 2-4, 6, 7

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and 22 are anticipated. Note page 9, lines 10-28 and Figure 6. The positive electrode is adjacent a polypropylene (resin) separator (page 14, lines 19-29). Thus, claim 8 is anticipated.

Since the electrode supports of the claimed invention and the prior art (Kawano) are the same, the electrode support of Kawano would inherently have in inclination of the protrusions and indentations that is perpendicular to the direction of a spiral when the electrode support is formed in a spiral shape. Thus, claim 9 is anticipated.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano et al., WO 99/63608.

See discussion of Kawano above. Kawano does not explicitly teach that the thickness of the non-sintered electrode is 500 μm or less.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because Kawano teaches the capacity of the electrode is determined from the amount of active material coated on the electrode substrate. Kawano teaches a coated-nickel positive electrode having a thickness of from 0.63-0.65 mm has an electrochemical theoretical capacity in the range of from 2674-3092 mAh (page 14, lines 3-18). Thus, one of skill in the art would have been motivated to vary the thickness of the non-sintered electrode of Kawano depending on the desired capacity. Kawano teaches the electrode

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support has a thickness of more than 200 μm , preferably more than 400 μm . The thickness of the electrode depends on the amount of active material coated on the electrode support. One of skill in the art would have known that the amount of active material coated on the electrode support determines the capacity of the electrode. Specifically, more active material results in higher capacity and a thicker electrode, while less active material results in lower capacity and a thinner electrode.

Response to Arguments

Applicant's arguments filed 10/2/03 have been fully considered but they are not persuasive.

35 U.S.C. 112, 2nd

Applicant asserts that "group" is well known to those skilled in the art as being "two or more". However, it is not the definition of a "group" that is unclear, it is what constitutes the group. Specifically, are all of the convex parts part of a single group and/or are all of the concave parts part of a single group? How are the convex parts divided between the "number of groups"? How are the concave parts divided between the "number of groups"? How is "a number of groups" of concave parts not less than half "the number of groups" of concave and convex parts?

35 U.S.C. 102(b)

Applicant argues WO 99/63608 does not teach or disclose that walls of the concave and convex parts are contoured in one direction. However, walls of the concave parts and walls of the convex parts cannot be contoured in one direction (same direction) because walls of concave parts are contoured or rounded inward and walls of convex parts are contoured or rounded

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outward (two different directions). WO 99/63608 teaches a non-sintered electrode support having protrusions (convex parts) and indentations (concave parts).

Applicant argues WO 99/63608 does not teach or suggest a thickness of 500 μm or less for the non-sintered electrode. However, WO 99/63608 does suggest the claimed thickness and teaches the thickness of the electrode can vary depending on the desired capacity of the electrode.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is (703) 308-8821. The Examiner may normally be reached Monday-Thursday (9:00 AM-7:30 PM). My supervisor is Pat Ryan, who can be reached at (703) 308-2383. The Art Unit receptionist can be reached at


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(703) 308-0661 and the official fax numbers are 703-872-9310 (after non-final) and 703-872-9311 (after final).

December 17, 2003



Patrick Ryan
Supervisory Patent Examiner
Technology Center 1700